

JUL 16 1998

SEQUENCE LISTING

1. GENERAL INFORMATION:

- (i) APPLICANT: TRYLOVA, IRENA
WOLPE, STEPHEN D.
- (ii) TITLE OF INVENTION: INHIBITOR OF STEM CELL PROLIFERATION AND
USES THEREOF
- (iii) NUMBER OF SEQUENCES: 33
- (iv) CORRESPONDENCE ADDRESS:
(A) ADDRESSEE: NIXON & VANDERHYE P.C.
(B) STREET: 110 NORTH GLEBE ROAD
(C) CITY: ARLINGTON
(D) STATE: VIRGINIA
(E) COUNTRY: U.S.A.
(F) ZIP: 22201-4714
- (v) COMPUTER READABLE FORM:
(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0, Version #1.30
- (vi) CURRENT APPLICATION DATA:
(A) APPLICATION NUMBER: US 08/832,443
(B) FILING DATE: 11-APR-1997
(C) CLASSIFICATION:
- (vii) ATTORNEY/AGENT INFORMATION:
(A) NAME: BYRNE, THOMAS E.
(B) REGISTRATION NUMBER: 32,205
(C) REFERENCE/DOCKET NUMBER: 1831-222
- (ix) TELECOMMUNICATION INFORMATION:
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2. SEQUENCE INFORMATION:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOL: linear

(ii) MOLECULE TYPE: peptide

300 23

INFORMATION FOR SEQ ID NO:2:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 15 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Cys	Phe	Pro	His	Phe	Asp	Leu	Ser	His	Gly	Ser	Ala	Gln	Val	Cys
1			5					10					15	

(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 19 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Asp	Ala	Leu	Thr	Asn	Ala	Val	Ala	His	Val	Asp	Asp	Met	Pro	Asn	Ala
1				5				10						15	

Leu Ser Ala

INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 17 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

INFORMATION FOR SEQ ID NO:5:

(1) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 9 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Leu Val Val Tyr Pro Trp Thr Gln Arg
1 5

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 8 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Leu Val Val Tyr Pro Trp Thr Gln
1 5

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 7 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Leu Val Val Tyr Pro Trp Thr

(i) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Leu Val Val Tyr Pro Trp
1 5

(x) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 5 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Leu Val Val Tyr Pro
1 5

(x) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Val Val Tyr Pro Trp Thr Gln
1 8

(x) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Tyr Ile Trp Thr Gln Arg Phe
1 5

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 6 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Tyr Pro Trp Thr Gln Arg
1 5

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 5 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Tyr Ile Trp Thr Gln
1 5

INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 6 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

Tyr Ile Trp Thr Gln Arg

(11) INFORMATION FOR SEQ ID NO:15:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 423 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

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GTGCTGTCTC CTGCGGACAA GACCAACGTC AAGGCCGCCT GGGGTAAGGT CGGCGCGCAC      60
GCTGGCGGAGT ATGGTGCGGA GGCCCTGGAG AGGATGTTCG TGTCCTTCCC CACCACCAAG      120
AGCTACTTCC CGCACTTCGA CCTGAGGCAC GGCTCTGCCC AGGTTAAGGG CCACGGCAAG      180
AAGGTGGCCG ACGCGCTGAC CAACGCCGTG GCGCAGTGG ACGACATGCC CAACGCGCTG      240
TCCGCCCTGA GCGACCTGCA CGCGCACAAG CTTCGSGTGG ACCCGGTCAA CTTCAAGCTC      300
CTAAGCCACT GCCTGCTGGT GACCCTGGCC GCCCACCTCC CTCGCGAGTT CAGCCCTGGG      360
GTGCACGCCT CCCTGACAAA GTTCCTGGCT TCTGTGAGCA CCGTGCTGAC CTCCAAATAC      420
CGT                                         423

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(12) INFORMATION FOR SEQ ID NO:16:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 141 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Met Leu Ser His Ala Asp Lys Thr Arg Val Lys Ala Ala Thr Lys Lys

Ala Leu Thr Asn Ala Val Ala His Val Asp Asp Met Ile Asn Ala Leu
65 70 80
Ser Ala Leu Ser Asp Leu His Ala His Lys Leu Arg Val Asp Pro Val
85 90 95
Asn Phe Lys Leu Leu Ser His Cys Leu Leu Val Thr Leu Ala Ala His
100 105 110
Leu Pro Ala Glu Phe Thr Pro Ala Val His Ala Ser Leu Asp Lys Phe
115 120 125
Leu Ala Ser Val Ser Thr Val Leu Thr Ser Lys Tyr Arg
130 135 140

1) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 438 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

GTGCAGCTGA CTCCTGAGGA GAAGTGTGCC GTTACTGCCC TTGCGGGCAA GGTGAACGTG 60
GATGAAGTTG GTGGTGAGGC CCTGGGCAGG CTGCTGGTGG TTTACCTTTG GACCCAGAGG 120
TTCTTTGAGT CCTTTGGGGA TCTGTCCACT CCTGATGCTG TTATGGGCAA CCTAAGGTG 180
AAGGTTGATG GCAAGAAAGT GCTCGGTGCC TTTAGTGATG GATGGGCTCA CCTGGACAAC 240
TAAATTTAA TTTTATTAAT ATTATGTAAT TTATTTCTA AAGATTTAA TTTATATTT 300
TAAATTTAA TTTATTTTAA TAAATTTTAA TTTATTTTAA TTTATTTAA TTTATTTAA 360
TAAATTTAA TAAATTTAA TTTATTTTAA TAAATTTTAA TTTATTTAA TTTATTTAA 420
TAAATTTAA AGTATCAC 438

2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 148 base pairs

XXI SEQUENCE DESCRIPTION: SEQ ID NO:18:

```

Val His Leu Thr Pro Glu Glu Lys Ser Ala Val Thr Ala Leu Trp Gly
1      5      10      15

Lys Val Asn Val Asp Glu Val Gly Gly Glu Ala Leu Gly Arg Leu Leu
20      25      30

Val Val Tyr Pro Trp Thr Gln Arg Phe Phe Glu Ser Phe Gly Asp Leu
35      40      45

Ser Thr Pro Asp Ala Val Met Gly Asn Pro Lys Val Lys Ala His Gly
50      55      60

Lys Lys Val Leu Gly Ala Phe Ser Asp Gly Leu Ala His Leu Asp Asn
65      70      75      80

Leu Lys Gly Thr Phe Ala Thr Leu Ser Glu Leu His Cys Asp Lys Leu
85      90      95

His Val Asp Pro Glu Asn Phe Arg Leu Leu Gly Asn Val Leu Val Cys
100     105     110

Val Leu Ala His His Phe Gly Lys Glu Phe Thr Pro Pro Val Gln Ala
115     120     125

Ala Tyr Gln Lys Val Val Ala Gly Val Ala Asn Ala Leu Ala His Lys
130     135     140

Tyr His
145

```

XXII INFORMATION FOR SEQ ID NO:19:

- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 141 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS:
 - (D) TOPOLOGY:
- (2) MISSION TYPE:

XXIII SEQUENCE DESCRIPTION: SEQ ID NO:19:

```

Val Leu Ser Gly His Asp Lys Ser Asn Ile Lys Ala Ala Thr Gly Lys
1      10      20

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Ala Leu Ala Ser Ala Ala Gly His Leu Asp Asp Leu Pro Gly Ala Leu
 61 70 79

Ser Ala Leu Ser Asp Leu His Ala His Lys Leu Arg Val Asp Pro Val
 85 90 95

Asn Phe Lys Leu Leu Ser His Cys Leu Leu Val Thr Leu Ala Ser His
 100 105 110

His Pro Ala Asp Phe Thr Pro Ala Val His Ala Ser Leu Asp Lys Phe
 115 120 125

Leu Ala Ser Val Ser Thr Val Leu Thr Ser Lys Tyr Arg
 130 135 140

(ii) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 146 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Val His Leu Thr Asp Ala Glu Lys Ala Ala Val Ser Cys Leu Trp Gly
 1 5 10 15

Lys Val Asn Ser Asp Glu Val Gly Gly Glu Ala Leu Gly Arg Leu Leu
 20 25 30

Val Val Tyr Pro Trp Thr Gln Arg Tyr Phe Asp Ser Phe Gly Asp Leu
 35 40 45

Asn Ser Ala Ser Ala Thr Met Gly Asn Ala Thr Thr Lys Ala His Gly
 50 55 60

Lys Lys Val Ile Thr Ala Phe Asn Arg His Leu Asn His Leu Asn Ser
 65 70 75

Leu Lys Gly Thr Phe Ala Ser Leu Ser Ala Leu His Tyr Asp Lys Leu
 80 85 90

His Val Asp Thr Ala Asn Thr Ala Thr Thr Gly Asn Met Thr Thr Thr
 95 100 105 110

141

1.1 INFORMATION FOR SEQ ID NO:21:

(1) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 141 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(2) MOLECULE TYPE: peptide

(3) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Val	Leu	Ser	Ala	Ala	Asp	Lys	Ala	Asn	Val	Lys	Ala	Ala	Trp	Gly	Lys	
1				5				10						15		
Val	Gly	Gly	Gln	Ala	Gly	Ala	His	Gly	Ala	Glu	Ala	Leu	Glu	Arg	Met	
			20					25					30			
Phe	Leu	Gly	Phe	Pro	Thr	Thr	Lys	Thr	Tyr	Phe	Pro	His	Phe	Asn	Leu	
			35				40					45				
Ser	His	Gly	Ser	Asp	Gln	Val	Lys	Ala	His	Gly	Gln	Lys	Val	Ala	Asp	
			50				55				60					
Ala	Leu	Thr	Lys	Ala	Val	Gly	His	Leu	Asp	Asp	Leu	Pro	Gly	Ala	Leu	
65					70					75					80	
Ser	Ala	Leu	Ser	Asp	Leu	His	Ala	His	Lys	Leu	Arg	Val	Asp	Pro	Val	
				85					90						95	
Asn	Phe	Lys	Leu	Leu	Ser	His	Cys	Leu	Leu	Val	Thr	Leu	Ala	Ala	His	
			100					105						110		
His	Ile	Asp	Asp	Phe	Asn	Pro	Ser	Val	His	Ala	Ser	Ile	Asp	Lys	Phe	
			115					120				125				
Val	Ala	Asn	Thr	Ser	Thr	Val	Ile	Thr	Ser	Ile	Tyr	Asp				
			130					135				140				

1.2 INFORMATION FOR SEQ ID NO:22:

(1) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 146 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

1.3 INFORMATION FOR SEQ ID NO:23:

Val His Leu Ser Ala Glu Glu Lys Glu Ala Val Leu Gly Leu Trp Gly
 1 5 10 15
 Lys Val Asn Val Asp Glu Val Gly Gly Glu Ala Leu Gly Arg Leu Leu
 20 25 30
 Val Val Tyr Pro Trp Thr Gln Arg Phe Phe Glu Ser Phe Gly Asp Leu
 35 40 45
 Ser Asn Ala Asp Ala Val Met Gly Asn Pro Lys Val Lys Ala His Gly
 50 55 60
 Lys Lys Val Leu Gln Ser Phe Ser Asp Gly Leu Lys His Leu Asp Asn
 65 70 75 80
 Leu Lys Gly Thr Phe Ala Lys Leu Ser Glu Leu His Cys Asp Gln Leu
 85 90 95
 His Val Asp Pro Glu Asn Phe Arg Leu Leu Gly Asn Val Ile Val Val
 100 105 110
 Val Leu Ala Arg Arg Leu Gly His Asp Phe Asn Pro Asp Val Gln Ala
 115 120 125
 Ala Phe Gln Lys Val Val Ala Gly Val Ala Asn Ala Leu Ala His Lys
 130 135 140
 Tyr His
 145

2) INFORMATION FOR SEQ ID NO:23:

(1) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 23 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(2) MOLECULE TYPE: peptide

3) REFERENCE SEQUENCE ID: 1, 2, 3, 4, 5

Val His Leu Ser Ala Glu Glu Lys Glu Ala Val Leu Gly Leu Trp Gly
 1 5 10 15

Leu Val Asn Val Asp Glu Val

4) SOURCE ORGANISM: Homo sapiens

5) DATE:

(i) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Val Leu Ser Ala Ala Asp Lys Ala Asn Val Lys Ala Ala Trp Gly Lys
1 5 10 15
Val Gly Gly Gln
20

(ii) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 14 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Phe Pro His Phe Asn Leu Ser His Gly Ser Asp Gln Val Lys
1 5 10

(ii) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Ileu Val Val Tyr Leu Trp Thr Ala Ala Phe
1 5 10

(ii) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS:

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Val Val Tyr Pro Trp Thr Gln Arg
1 5

(xii) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 4 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Tyr Pro Trp Thr
1

(xii) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 4 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Tyr Tyr Tyr Tyr
1

(xii) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 4 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Gly Lys Pro Tyr

(1) INFORMATION FOR SEQ ID NO:31:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 4 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Gly Leu Pro Tyr

(2) INFORMATION FOR SEQ ID NO:32:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 6 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Lys Met Trp Met Phe Arg

(2) INFORMATION FOR SEQ ID NO:33:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 6 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide